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Problems concerning dyslexia are specified, suggestions for working with dyslexics are made, and a number of programs to serve as models to be improved upon are described. The major problem noted is the development of materials and procedures that can be used effectively with dyslexics. Emphasis is placed on reading from left to right, training in letter-sound correspondence, training in sound discrimination, and training in blending; in short, emphasis is on decoding procedures. Hearing sounds accurately is important in producing the sounds orally or in writing. Critical ingredients of clinical management of dyslexics pointed out are one-to-one instruction, a multisensory approach, and highly structured material. Instructors who carry on the tutorial work do not need to be highly trained, and there is no need for additional equipment such as machines and special games. No one method is specified; a variety of environmental, emotional, and intellectual situations should be employed so that modifications, variations, and alterations can be made whenever necessary. References are included. (RT)

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Charles L. Shedd

SOME EXPLORATORY STUDIES ON THE CLINICAL MANAGEMENT OF DYSLEXIA

ACLD

When Cortes and his men arrived in Tenochtitlan (now Mexico City) in 1519, they were astounded. It was the enchantment they had heard of in the legend of Amadis. Both Bernal Diaz del Castillo and Francisco Lopez de Gomara, participant chroniclers of the conquest, devoted much attention to the architecture, the fine arts and the markets, continually iterating in their recital that it was more like a dream than a reality. But of all the amazing sights, sounds and smells the most impressive was Montezuma's establishment; for in size and magnificence it was truly appropriate for a Sybaritic potentate. There were living quarters for Montezuma and his two wives and many concubines, three hundred guests, and a thousand guards and attendants, council chambers, a royal armory, a royal treasury, a botanical garden and a zoo. It was this last which particularly intrigued these hard-bitten men at arms whose chief avocations lay in acquiring booty and enjoying the charms of dusky Dulcineas, for Montezuma had brought together representatives of all the animals and of the physically abnormal humans of his vast kingdom - serpents, eagles, jaguars, hunchbacks, dwarfs, clubfooted. Their interest and enthusiasm for this collection was glowingly related to Europe and sparked the creation of zoos and traveling shows containing animals and deformed humans. For over four hundred years these have served to amuse and amaze the onlooker.

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Now, for purposes of amazement and amusement, there can be no argument against zoos or traveling shows. Nor can there be a criticism that the selection of species and techniques of collection is improper, inadequate or limited. There can, however, be a criticism if the establishment and maintenance of these operations is seen as providing the subjects for comparative biological and differential psychological study. The criticism turns to an indictment if these selected menageries - animal or human - purport to relate to clinical management.

There are those who feel strongly about this when clinical management refers to the education of children. They feel that the consideration of only mentally retarded, intellectually gifted, visually defective, auditorily impaired, speech defective, physically crippled, brain damaged, cerebrally palsied, epileptic, emotionally and adjustmentally disturbed, anti-social and delinquent, as categories is entirely too restrictive. In addition, they react strongly to the Noah's Ark tradition of having two of each category in some special program to placate the demand for adequate education or to serve as examples for specialists in training. Quite simply there is a moral obligation involved in compulsory education; if we require by law that each child attend school, we should by law require that the schools educate them.

If such a consideration were to be acted upon, it would run into serious difficulties at the outset, for while there are many studies of a hit-and-run nature describing the performance of some clinical grouping relative to some evaluative instrument or some task devised by the

experimenter, there are few reports in the literature describing a comprehensive educational program.

The procedure of selecting a few children to participate in such restricted programs, of course, biases the data, so that the responses on instruments and tasks reflect the initial selection criteria. When data is made available, it is generally presented by way of a selected case history. In such instances, the remedial procedures and methods employed are described as prescriptive for the specific individual and hence are not generalizable. In more instances than we would like to admit, procedures have been carried out by a staff larger than the student population. In short, there are few models available for anyone desiring to initiate a program of clinical management for dyslexics other than a zoo or a Noah's Ark.

Botel (1968), who has undertaken the task of summarizing and indexing all the available literature on dyslexia, has found that "well over 90 per cent of the theory, reporting and research concerning dyslexia is in the area of definition, etiology and diagnosis". Of those few studies reported dealing with clinical management, such diverse procedures as psychotherapeutic treatment, medical treatment, perceptual training, gross motor training, kinesthetic reinforcement, eclectic educational methods, group and individual methods and extrensic reward are recommended. Also, suggested as panaceas, but with no substantiating evidence, are reduction of class size, team teaching, teacher's aids, teaching machines, the utilization of revised alphabets, colored words, programmed instruction, a return to phonics. Despite the

paucity of studies dealing with the education of dyslexics, a few researchers have a deep insight into the problem. Such are Johnson and Myklebust (1967) who have judiciously pointed out:

> "A final method or approach is not anticipated for the learning disability child any more than for the normal. On the other hand, through experience as well as research, a level of knowledge has been gained so that we can avoid a gross exaggeration of methods and claims for success. Likewise, we can avoid a conglomeration of approaches and an illogical, ill-conceived emphasis on any one behavioral aspect or function. Though there are limitations to all approaches, certain principles are evolving and a rationale for special education can be stated.
>
> ". . . Teaching children with learning disabilities must be strikingly individualized. The teacher must have the child's characteristics clearly in mind in addition to common information - intelligence level, home background, emotional status - she should know the nature of his learning, the defects, the integrities, the levels of function in spoken, read and written language, the non-verbal and medical aspects. She must have the total 'syndrome' in mind in order that the educational procedures can be applied with precisions and accuracy." (p.p. 57-58)

It must, thus, be borne in mind that reading, ordinarily, is built upon non-verbal experiences, auditory experience and visual-verbal experience. The dyslexic has difficulty in the discrimination, interpretation and retention of visual-verbal patterns. This demands from the outset of remediation an integration of the spoken word and the written word. Since the dyslexic cannot retain a whole sequence of letters and has difficulty blending sounds, the usual argument of global methods versus phonic procedures are beside the point. There can be no disagreement that the dyslexic child must be taught the letter name, the letter sound, the organization of the sounds into structural language units. There can, likewise, be no disagreement that a multi-sensory approach must be utilized, i.e., vision, audition, kinesthesis and tactation. The problem at this point is to develop materials and procedures which may be used effectively with dyslexics. None now exist.

By necessity picture clues, meaning-frequency in word selection, controlled vocabulary, silent reading, stress on meaning, appreciation and applicational responses, all of which are heavily stressed in basal reading programs, must be reduced if not completely eliminated. Instead there must be an emphasis on reading words from left to right, training in letter-sound correspondence, training in sound discrimination, training in blending, in short, emphasis in decoding procedures.

There can be no doubt that the cherished tenet of modern education "interest and motive" as usually conceived must be abandoned in the

early days of dyslexic instruction. But that they in fact operate in the remedial situation with other goals or incentives is obvious. Johnson and Myklebust (1966) have pointed out:

> "It is rarely necessary to work on motivation with dyslexics: they want to learn to read. One 15 year old boy said 'I went through one reading clinic after another with people asking me whether I liked red books or yellow books or whether I wanted to read about horses or trains. Actually it didn't matter because all I wanted to do was to learn to read.'"

Chall (1968) also points out, "Most reading specialists have long held that it is the story, the content of what is read, that makes for interest and enjoyment. This is, of course, the philosophy behind reading series and self-selection programs: that the child's interest in reading the story is the key to his desire to develop reading skills."

She says, "I do not find this assertion valid. The little children I watched were excited and keenly interested in words, sounds, spellings and rules as they were stories . . . . Children seem to be just as eager to learn about the spelling sound of words as they are to read stories which adults think are silly. They seem to be just as interested in working together on some task as pursuing individual goals."

Rabinovitch (1959) indicated the nature and process of remediation in terms of presently existing models and procedures. He says,

"Retraining is slow, unsteady; ultimate results are less favorable (than those who display secondary reading difficulties). Learning needs constant reinforcement and numerous approaches, visual, auditory, kinesthetic have to be introduced. . . . Training in directional orientation, visual memory, phonic recognition and other techniques are called for. There tends to be little carry over from day to day and patients are often discouraged by their slow uneven progress. Crucial to treatment is the relationship with remedial therapist who must have infinite patience and ingenuity. At the present time many adolescents with primary retardation leading to illiteracy may, with remedial therapy extending over several years, achieve a fourth or fifth grade level of competence although some may advance further."

Contained in the above description are the following: the necessity of private tutorial help, a highly trained therapist, specially prepared materials, instruction in each area of difficulty, long term treatment, poor to moderate success. If this is the case, the possibility of helping many dyslexics is unlikely for there are few training programs for tutors, only a few could qualify as highly trained, there are few specially prepared materials, techniques for dealing with some of the characteristics are uncertain. The cost in terms of time and money are prohibitively high and the results in terms of effort are negligible.

The scope of the problem becomes apparent when we observe that Hallgren (1950) found 18 per cent of the school age population in Stockholm were dyslexic, Gripenberg (1963) reported 23.5 per cent

in Helsinki, Gjessing (1958) reported 3.4 per cent (only severe cases) in Norway, Preston (1941) reported 20 per cent in the United States. Conservatively 10 per cent of the school age population are dyslexic and require remedial help. In the United States this means that 3.5 million children require help.

In 1960 investigation was initiated at the Reading Research Institute at Berea College, Berea, Kentucky. The program had two primary aims; understanding dyslexia as a diagnostic entity, and the development of specific remedial procedures. Relative to the second of these, there was an orientation of: 1. developing procedures and materials which might be used by semi-skilled or unskilled individuals as instructors under supervision; 2. developing a program which might reduce treatment time; 3. developing programs which might be incorporated into ongoing school programs and developing programs which might be economically feasible. In 1967 a similar program was instituted in Birmingham, Alabama, and in 1968 another in Montgomery, Alabama.

The students who participated in these programs were selected on the basis of standard clinical instruments, special devices to indicate level of perceptual-motor functioning and developmental information provided by parents. All the subjects possessed those characteristics indicated as constituting a dyslexic syndrome.

By this we mean that there was a failure to develop specific perceptual-motor skills to expected proficiency independent of instruction, motivation, sense organ functioning, intelligence, and CNS damage.

That this condition qualifies as specific is indicated by the discrepancy between achievement in certain activities as compared to achievement in other activities. Dyslexia is not a disease, but an arrestation of anticipated development.

The discrepancies in the development of perceptual-motor skills may be summarized as follows (Shedd 1967, 1968):

1. Spotty performance on IQ tests; achievement is high in some areas, low in others.
2. Below mental age on tests of drawing a person.
3. Visual motor Gestalt tests are poor for age and indicated intelligence.
4. Poor performance on group tests which require reading and writing.
5. Impaired orientation in time.
6. Impaired discrimination of right and left.
7. Poor spatial orientation.
8. Field dependent perception.
9. Frequent perceptual reversals in reading and writing numbers beyond age and instructional level.
10. Impaired reproduction of tonal pattern.
11. Impaired discrimination of auditory stimuli.
12. Frequent mild speech irregularities.
13. Non-specific motor awkwardness.
14. Aperiodic loss of fine motor skills.

15. Reading disabilities.

16. Spelling disabilities.

17. Writing disabilities.

18. Variability in performance.

19. Poor ability to organize work.

20. Slowness in finishing work.

21. Short attention span for age.

22. Impaired concentration ability.

We should iterate again that all of the characteristics were present or there had to be evidence that they were present prior to specific remediation before the child was accepted into the program.

All of the children had IQ's of 100 or better as indicated by the Stanford-Binet. All fell within the normal range as indicated by the Rorschach and Draw-a-Person Tests. In addition, the social status scale proposed by Eels et al was administered and only those who fell within the upper and middle classes were included. All of the subjects were drawn from urban areas where educational facilities were regarded as adequate. All of the subjects were aware that they had a reading problem. Their problem had been diagnosed by school authorities and/or psychologists.

In eight years 815 children have been selected for participation in the eight-weeks summer programs. It is apparent that these children had been compared to "normals" repeatedly and had failed to measure up. Concerned parents had made it possible for them to receive every type of supposed ameliorative aid that could be provided. This becomes

obvious when we see that: 50 per cent of the total had been retained in one or more grades in school; 4 per cent had been socially promoted; 32 per cent had received tutorial help only; 7 per cent had received remedial help only (provided by the school); and 25 per cent had received remedial and tutorial help; a total of 64 per cent had received remedial and tutorial help; 31 per cent of those retained received additionally, tutorial and remedial help. In addition 20 per cent of the total had received some type of psychiatric and psychological counseling.

During eight years of operation a variety of variables were introduced; many of those discovered by Botel in his search for clinical management procedures were used (Shedd, 1968). Despite suggestions and claims our work shows that the critical ingredients of clinical management of dyslexics are: one-to-one instruction, a multi-sensory approach, and highly structured material. We have found that the instructors who carry out the tutorial work do not need to be highly trained; there is no need for additional equipment such as machines, special games, and the like. No special relationships need be established between the instructor and the student, and no extrensic inducements need be employed for student participation.

We diligently searched through all available material and found there was none which would systematically cover the age and grade range covered by our sample. Consequently, material had to be developed by the staff. In this effort the work of Bloomfield, Hjelmslev,

de Saussure, Leopold, Chomsky, and other linguists provided the theoretical and statistical basis. The material developed required the student to learn the name of a letter and the sound of the letter; for this reason we referred to the operation as alphabetic-phonetic. Letters were introduced; the student was asked to identify the letter by name, to trace the letter on a model with a finger of the preferred hand, to reproduce the letter on sandpaper without the model, then to write the letter with a pencil. A sound was then given to the letter and the student was asked to write the letter while making the sound. As soon as the student could learn two letters, such as a and t, they were added together to form a larger language unit, a phonogram or a word family. Additional consonants could then be learned so that words were formed. As a consequence of this procedure, the operation was termed structural-linguistic. The material was thus referred to as APSL. This technique enabled a student to read at the first session; certainly positive feedback to the non-reader. As he progressed and encountered difficulty, he had all the necessary skills for decoding. From this elemental beginning, there was a continual progression to more complex units.

The consonants selected for initial introduction were those with maximal discrimination relative to normal language development. Only short vowels were introduced in the beginning. However, in the early stages of instruction, it was recognized that some words which were exceptions to the ordered presentation would be required. These words were reduced to a minimum and only those which necessity

demanded were taught as sight words. These were presented as total sound units, and the process described for single letters was employed.

After all the short vowel phonograms were introduced and related to all beginning consonant sounds, all initial consonant blends were related to already recognizable phonograms. The same was true of digraphs. Then there was an expansion by means of vowel shift from short to long by the addition of a terminal e. The material continued in expansion until a college level was attained. The simple phonograms gave way to words and words to expressions and phrases. In the APSL material a vocabulary of 18,000 words is introduced.

It was found that hearing sounds accurately was important in producing the sounds orally or in writing. In the beginning stages of instruction, the instructor overemphasized all the sounds in order for the students to make the relationship between sounds and written symbols. Materials were prepared which emphasized this feature and time each day was spent on auditory discrimination.

Spelling was conceived as a part of the total language learning process. Spelling is an accurate patterning of letters within a word; consequently, the pattern must be reproduced exactly as we accept the pattern in our language. It is not enough that the proper letters were included - they must be produced in correct serial ordering. Once the student grasps the concepts of sounds and symbols these are transferable to more complex situations. Thus, the individual learned to spell as he learned to read.

Speech, reading, writing, and spelling were all viewed as a part of the educational process.

Eight weeks of intensive work in which the students spent two hours daily on APSL produced exciting results. When the Gates and Gates-McKillop alternate forms were administered pre and post, an average increase of 1.89 grade levels was obtained. Of some note is that by careful selection of subjects each served as his own control under two conditions, non-specific remediation and specific remediation.

One might like to interpret such results as a function of the one-to-one instruction, or Hawthorne effect. This has been ruled out by the fact that 91 per cent of the population had received tutorial and/or remedial help and/or psychotherapy, certainly situations where they received special and one-to-one attention. Such an idea as "any method will be effective as long as there is an intensive tutorial work" is not indicated by these findings.

In 1965 there was an opportunity to employ the procedures developed at Berea with adult illiterates in the Kentucky State Reformatory, La Grange, Kentucky. This was viewed as consequential for they represented a population with characteristics in complete opposition to those selected for Berea. Kentucky State Reformatory receives those individuals sentenced by the court who are manageable in a dormitory situation, who are not consideredsecurity risks, and who are not habitual criminals. The average inmate strength is 1,500 with a range of 1,150 to 1,750. The strength at the time of the study was 1,250.

With the aid of Reformatory personnel, all those individuals who came from Appalachia and who had scores on the incoming test battery below the sixth grade level were invited to listen to an explanation of the program. These meetings were set up so that the staff could present the plan and then interview each man immediately following the presentation for the purpose of answering questions or further explaining the program. There were 245 inmates who attended the meetings or almost half of those from Appalachia. Of these 145 or 29 per cent of the total volunteered to participate in the program. The Stanford Achievement Test, the Lorge-Thorndike Intelligence Test, the Bell Personality Test, the Berea Gestalt, the Right-Left Discrimination Test, the Draw-a-Person Test and the Gates-McKillop Oral Reading Test were administered at the beginning of the program and after 200 hours of instruction.

TABLE I

CLAIMED EDUCATIONAL ACHIEVEMENT AS COMPARED WITH ACHIEVED LEVEL AS MEASURED BY THE STANFORD ACHIEVEMENT TEST

GRADE	CLAIMED (N-245)		ACHIEVED (N-240 - 5 not tested)	
	f	%	f	%
2 or less	11	4.5	40	16.6
3 or less	5	2.0	28	11.7
4 or less	10	4.1	41	17.1
5 or less	13	5.3	38	15.8
6 or less	24	9.8	33	13.7
7 or less	34	13.1	22	9.7
8 or less	74	30.2	22	9.2
9 or less	26	10.6	5	2.1
10 or less	48	19.6	11	4.6

Table I presents information of claimed grade completion and actual achievement as measured by regular Reformatory intake procedures. The mean grade obtained by those attending the meeting was 4.9. Those who elected to participate in the program had a mean achievement of 3.1. 51 per cent of the sample were sentenced for crimes against property and 49 per cent were sentenced for crimes against people.

An invitation to serve as instructors was issued to the inmates. Sixty individuals volunteered to participate. Of these, fifty-four were selected. Those selected for participation were given the same battery of tests as the students.

Employing tests scores, intake information and social case reports, three basic groups emerged from the student population; dyslexics, organic, and educationally deficient. The dyslexics conformed to the same disparate performances indicated earlier. The organic or brain damaged cases were diagnosed in terms of history of frank brain damage derived from medical and psychiatric records, personal report and signs on the Berea Gestalt. The educationally deficient were diagnosed in terms of poor education application or achievement irrespective of specific causes, such as poor schools, broken homes, emotional problems, etc. The breakdown into categories was as follows: dyslexic 42 per cent, organic 32 per cent, educationally deficient 26 per cent.

Procedures were set up which have been found effective for each of these categories. For the dyslexic cases the VAKT was employed.

For the organic there was a superabundance of cues, massive repetition and impoverishment of the instructional milieu. For the educationally deficient, there was a thorough grounding in APSL with a multisensory method being applied only when difficulty arose.

The regular classrooms of the Reformatory school were employed. Standing screens constructed of plywood, or in some cases standing blackboards, were employed to separate the available space into smaller work areas. In this way, 60 cubicles were created. In each cubicle an inmate instructor would work with from one to four inmates. In every case, organic subjects received one-to-one instruction, but in most instances, educationally deficient individuals were instructed in small groups of two or three. The students received instruction for two and one-half hours each day. The remainder of the day was occupied with a regular Reformatory work assignment. Approximately half of the students came for instruction in the morning and the other half of the students came in the afternoon.

The instructors received thirty hours of instruction prior to the initiation of the program. In addition they met for an additional half hour each day for training. The Reformatory officials made available to the inmate instructors those facilities and materials customarily provided for inmate teachers, clerks, and other specialized personnel. These consisted of khaki shirts and trousers, low cut shoes and the possibility of being placed on a waiting list for a private room. In addition, coffee was provided at break time for the instructors. These were the only incentives.

The results were as follows:

	Pre	Post	Difference
Stanford Achievement Test			
Word Meaning	3.6	4.7	1.1
Paragraph Meaning	3.2	4.3	1.1
Word Study Skills	1.9	3.9	2.0
Arithmetic Applications	3.5	5.2	1.7
Lorge-Thorndike Intelligence Test			
Verbal	61.68	64.80	3.10
Non-Verbal	63.26	68.12	4.86
Gates-McKillop Oral Reading Test	3.5	7.5	4.0

The Lorge-Thorndike Intelligence Test yielded a mean IQ of 62 for the inmate student population and a mean IQ of 99 for inmate instructor population.

A second cycle of 200 hours was completed in which 159 inmates participated. The results were as follows:

	Pre	Post	Difference
Stanford Achievement Test			
Word Meaning	3.5	4.6	1.1
Paragraph Meaning	3.3	4.4	1.1
Word Study Skills	2.0	4.2	2.2
Arithmetic Applications	3.7	5.4	1.7
Lorge-Thorndike Intelligence Test			
Verbal	60.23	63.82	3.59
Non-Verbal	59.02	63.63	4.61
Gates-Mckillop Oral Reading Test	3.4	7.7	4.3

There were no significant differences obtained between the first cycle and the second cycle.

Of consequence in interpreting the results are 76 per cent of the sample had severe perceptual-motor disabilities, none of the instructors had an educational level beyond high school and there were negligible extrensic incentives for teachers and students. We must conclude that unskilled instructors with proper supervision may function effectively as instructors and gains may be made if the nature of the disability is diagnosed and the specific problem is dealt with on an individual or small group basis, with materials and techniques specific to the disability.

Similar programs at Eddyville Penitentiary, Eddyville, Kentucky, a maximum security institution, produced like results. Totally 1,200 inmates received such training.

In the summer of 1968 a program was undertaken at the Girls' Training School, Chalkville, Alabama. Forty-eight girls participated. The mean IQ as measured by the California Test of Mental Maturity was 78. Diagnostic procedures similar to those employed at LaGrange and Eddyville indicated that 23 per cent of the girls were dyslexic, 26 per cent were organic, and 51 per cent were educationally deficient.

The girls received 75 hours of instruction during an eight-week period. The Gates-McKillop Oral Reading Test was administered pre and post, the average increase was .78 grade levels.

In 1967 a program was initiated in the Mountain Brook, Alabama schools in which 156 subjects in grades 4 through 8 were diagnosed as dyslexic and received remediation. Initial screening was performed by

classroom teachers who received a fifteen-hour workshop on the nature, diagnosis and remediation of dyslexia. The individuals screened by the teachers were referred to a committee of teachers who had received additional training in the administration of specific tests. The results of these tests, teachers reports, and material from the cumulative folder were reviewed by the teachers and the staff of the Reading Disability Center of the University of Alabama Medical College. If the results of this staffing were inconclusive, additional tests were administered by the Reading Disability Center staff or the child was referred to another agency. Parents were notified of the findings and the nature of the forthcoming program and on the basis of this information were allowed to make a decision concerning their child's participation. In the elementary schools all students are placed in reading classes commensurate with ability. There are four classes for each grade level. All those children with dyslexia would be automatically placed in the lowest reading group. The teacher of this group chose to work with the dyslexia program. Those children with parental permission were released three periods each week to receive individual instruction. Those remaining in the regular class were worked with by the teacher. Twice weekly the entire class worked on materials which would be supportive of the remedial program. At the junior high school level, those diagnosed as dyslexic and who had parental permission were released from study hall to be assigned to a remedial reading section. They received five hours of individual instruction per week. The individual instruction was provided by the Junior League, the Council

of Jewish Women and the Parent-Teachers Association. The total cost per child was $80.00. This fee covered the training of teachers, training the volunteers, providing material for individual instruction and some supervision.

At the beginning of the program the Gates-McKillop Oral Reading Test was administered. An alternate form was readministered at the end of the first semester and the original form at the end of the school year. This indicated an overall increase of 1.49 grade levels at the end of the first semester, 1.28 grade levels at the end of the second semester. The increase for the full nine months was 2.77 grade levels.

Employing an arbitrary and approximate standard of one year in reading performance above grade level for grades one through four and two years performance above grade level for grades five through eight, 70 per cent of the sample were recommended for return to a regular reading program. The school administration polled the teachers concerning "obvious or descernible" changes in behavior in the classroom for those children involved in the dyslexia program. This indicated that 72 per cent showed recognizable improvement in behavior in the regular classroom situation.

The volunteers who participated in the program were queried by way of a questionnaire prepared by the Junior League of Birmingham concerning their participation in the program. Of the volunteers polled 98% felt that it was an exciting, vital program in which they were pleased to participate.

Of considerable consequence was a replication of the procedures and methods employed in the Alabama program in Natchez, Mississippi. The Natchez Perceptual Development Center under the direction of Mrs. H. Lee Jones is developing a demonstration center for dyslexia. Beginning in September, 1967, they selected 44 dyslexic children who had been referred by classroom teachers who had received workshop information conducted by the staff of the Reading Disability Center of the University of Alabama Medical College. The staff of the Natchez Perceptual Development Center trained volunteers to work on a one-to-one basis with the children, employing materials and procedures developed at the Medical College. At the onset of the program the Gilmore Oral Reading Test was administered. It was readministered at the end of the first semester and at the end of the year. The increase in reading skill was 1.10 grade levels at mid-term and 2.15 grade levels for the academic year. The variation in improvement rate is in all likelihood due to the intelligence difference, M-100 for Natchez, M-120 for Mountain Brook, heterogeneity of school population in Natchez as compared to homogeneity in Alabama, and lack of skilled supervisors in Natchez as compared to skilled ones in Alabama, slight differences might be possible due to the use of different tests.

A program in Florence, Alabama was undertaken in January, 1968. This followed the models of Mountain Brook and Natchez. There were twenty-seven students and 78 participant volunteers. The Gates-McKillop, pre and post, indicated an increase of 1.38 grade levels.

A variation was undertaken at McKeachern, Georgia. Choosing the fifteen most affected dyslexics in grades four through seven, they assigned them to a reading class. The teacher presented the APSL material and this was proctored by volunteers. The rate of increase for the entire year as measured by the Gates-McKillop was 2.07 years.

During the first semester of the 1968-69 school year there was a repetition of the Mountain Brook program. The number of students participating was 105. Eighty children who were diagnosed as educationally deprived received small group instruction five hours a week from a special reading teacher for a period of eight weeks. The Gates-McKillop, pre and post indicated an increase of 1.43 years for the dyslexic group and 1.05 for the educationally deprived group.

A comparable program to the Mountain Brook dyslexic program was initiated at St. Albert The Great School in Louisville, Kentucky. Fifty-eight children diagnosed as having dyslexia or related disorders participated. Volunteers from the community were trained and supervised by Mary Lewis Mercke. They worked with the children three hours per week for fourteen weeks. The average rate of increase was .70.

A program in Selma, Alabama, enrolled 45 dyslexic children. Another in Montgomery, Alabama, enrolled 87 dyslexic children. Both programs operated for two and one-half hours each Saturday morning for fourteen Saturdays. The rate of increase at Selma was .98 grade levels and at Montgomery 1.02 grade levels.

The program of Natchez-Adams County Perceptual Development Center has been extended to cover three counties and to include 738 dyslexic children. They have instituted a number of variations and some of these have not yet been evaluated. The portion of the program which reproduced last year's operation replicated the findings.

Programs were initiated in January, 1969, in Brewton, Alabama, Louisville, Kentucky, Charlotte, North Carolina and New Albany, Indiana. These are dealing with over 250 dyslexic children, following the model developed at Mountain Brook. Evaluation will be made in the spring.

These programs are attempts to meet the problem of clinical management. A variety of environmental, emotional and intellectual situations have been employed. There is no claim that what is being developed is <u>the</u> method of dealing with dyslexia. There may be other techniques, other procedures, other operations which might be equally effective, or perhaps even more effective. These facts at present are not known and obviously cannot be known until the problems are dealt with. In these investigations there is no contention that one "method" is better than another "method". The problem is rather may tentative methods be developed so that modifications, variations and alterations be effected whenever indicated.

It seems to us that the procedure is obvious. Despite the obvious-ness, this and other dyslexia studies have been subjected to a standard criticism which runs something like this: The results are inconclusive

since the experimenter did not validate his work by employing other remedial methods with comparable groups of children. Nor did he take account of the therapeutic and remedial value irrespective of method inherent in sympathetic attention given by the clinician or teacher to the poor reader.

At first glance this type of criticism seems reasonable. Examination indicates, however, that an experiment would have to consist of methods, a, b, c, ...n and no method. Since there is no congery of methods as such competing for superiority in dealing with the dyslexic, the criticism loses its significance. The category No Method also poses a problem even more difficult to an experimenter than methods variation. No method might be arranged if a statistical group might be employed, i. e. if a group were tested at the beginning and end and used as a control, but by so doing they would be without the attention of the tutor or teacher. Another activity or play group would not suffice since they would have a different introactional pattern. Quite simply there is no tutorial placebo.

Such criticism makes clear not the deficiency of a program to aid dyslexic children but rather the impossibility of an experiment employing educational methods. There are two sources of error which cannot be controlled or ascribed, student error and teacher error. As a consequence, "method" accepted, generally in education, depends upon holy scriptures.

The problem facing an investigator is apparently not one of performing a <u>crucial</u> experiment. Despite this deficiency, behavioral science has made some important contributions to the study of education and will make many more. There is, however, little value to be obtained by the behavioral scientist pretending that he presently does have or immediately will bring the experimental procedures of the natural scientist to bear on "methods".

Already there is within the area of dyslexia research too much precision on trivial matters, too little respect for facts as against grand theories, too much respect for insights that are commonplace, too much indication or suggestion and too little proof, too little genuine accumulation of generalizations, too little regard for learning of the past. What is required is investigation not pseudo-scientific sounds.

Some of the problems of the clinical management of the dyslexic have been dealt with. It is hoped that such work may serve as a model which may be sharpened and perfected. Some areas of concern in clinical management have been specified and dealt with with moderate success. These are: 1. Procedures and materials which might be used by semi-skilled or unskilled individuals as instructors under supervision; 2. A program which might reduce treatment time; 3. Programs which might be incorporated into ongoing public school programs; and 4. Programs which might be economically feasible.

We feel that we have at least pointed a way for all dyslexics to obtain help in a free, open fashion rather than the few selected cases chosen to amaze and amuse in a zoo.

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